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ABSTRACT

The course outline is designed to provide instruction in planning, laying out, and building various type forms for concrete. The course contains seven blocks of study totaling 135 hours in length. The student will be expected to have mastered basic construction skills and basic mathematics. Upon completing the course, the student will have an understanding of foundation forms, column and wall forms, beams and ceiling forms, safe stripping and applied mathematics. Instruction is accomplished by means of laboratory exercises, classroom lectures and textbook references, with emphasis on manipulative processes. A bibliography and sample post-test are appended. (MW)

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AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

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Course Outline

CARPENTRY - 9163
(Concrete Forms)

Department 48 - Quin 901890

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DADE COUNTY PUBLIC SCHOOLS
DIVISION OF INSTRUCTION • 1974

ED103710

D A D E C O U N T Y P U B L I C S C H O O L S

1450 NORTHEAST SECOND AVENUE

M I A M I, F L O R I D A 33132

Course Outline

CARPENTRY - 9163
(Concrete Forms)

Department 48 - Quin 901890

county office of

VOCATIONAL AND ADULT EDUCATION

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Miami, Florida 33132

October 9, 1974

Published by the School Board of Dade County

Course Description

9163	48	901890	Concrete Forms
State Category Number	County Dept. Number	County Course Number	Course Title

Overview: A study of the geometric formation of concrete and the construction of wood forms.

Objectives: Students will lay out, size, construct, tie and brace a column form.

Content: A study of forming concrete foundations, walls, columns and related parts of buildings.

Selection Considerations: The student in this course will be expected to have the skills and knowledge of building construction plans and a basic knowledge of mathematics.

PREFACE

This second quinmester course outline is designed to provide instruction in planning, laying out and building various type forms for concrete.

This course contains seven blocks of study which are subdivided into several units and is 135 hours in length. The student in this course will be expected to have the skills and knowledge of building construction plans and a basic knowledge of mathematics.

Upon completing this basic course, the student will have an understanding of the principles of concrete form construction.

Taking into consideration the ability of each student, the teaching techniques will lend themselves to each particular situation. Instruction is accomplished by means of laboratory exercises, classroom lectures and textbook references. Emphasis is placed on manipulative processes.

This outline was developed through the cooperative efforts of the instructional and supervisory personnel and the Vocational Curriculum Materials Service, and has been approved by the Dade County Vocational Curriculum Committee.

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WITH SUGGESTED HOURLY BREAKDOWN

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GOALS

The student must be able to:

1. Demonstrate the ability to develop the attitudes, values, manipulative skills and knowledge required for entering the carpentry trade and advancing in the related field.

2. Become acquainted with the various career opportunities in this broad occupational field.

3. Develop good safety habits and disciplines as they apply to the carpentry trade.

4. Demonstrate positive attitudes and pride in good craftsmanship.

SPECIFIC BLOCK OBJECTIVES

BLOCK I - INTRODUCTION TO FORM BUILDING

The student must be able to:

1. Define the purpose of concrete forms.
2. Explain the difference between a form side and a stud or wale.

BLOCK II - FOUNDATION FORMS

The student must be able to:

1. Describe a footing form and its purpose.
2. Describe the purpose of a grade beam and wall footing.
3. Explain the purposes of form bracing and back-filling.

BLOCK III - COLUMN AND WALL FORMS

The student must be able to:

1. Lay out, cut, stiffen and nail together a form indicated by the instructor.
2. Building a 12" x 18" x 8' column form.
3. Explain why some columns need to be deeper than 8" block.

BLOCK IV - BEAMS AND CEILINGS

The student must be able to:

1. Explain why planking is many times used as beam bottoms.
2. Explain why beam sides should be stiffened.
3. Show how and where to fasten a ledger on a beam side.
4. Describe the purpose for stringers and shoring when forming a ceiling floor.

BLOCK V - SAFE STRIPPING

The student must be able to:

1. Demonstrate the removal and cleaning of a form after using.
2. Explain why nails are promptly removed.
3. Perform cleaning and storing of form materials.

BLOCK VI - QUINMESTER POST-TEST

The student must be able to:

1. Determine the square footage of plywood needed for a form predescribed.
2. Total the number of linear feet of stiffeners needed for a predescribed form.

3. Calculate the linear footage of bracing or cleating needed for a long footing form predetermined by the instructor.
4. Calculate from a building construction plan the total amount of plywood needed for the foundation forms.
5. Calculate from a building construction plan the total linear feet of foundation form stiffeners needed.

Course Outline

CARPENTRY - 9163
(Concrete Forms)

Department 48 - Quin 901890

I. INTRODUCTION TO FORM BUILDING

A. Wood Form Sides
   1. Plywood
   2. Shiplap
   3. Tongue and groove

B. Stiffeners
   1. Studs
   2. Ledgers
   3. Wales
   4. Plate or sill
   5. Strengtheners
      a. Yokes
      b. Cleats
      c. Stakes
      d. Spreaders

C. Form Accessories
   1. Ties
      a. Snap
      b. Coil
      c. Bolt
   2. Clamps
      a. Adjustable
      b. U or jiffie

D. Manufactured Forms
   1. Steel
      a. Ceiling, flat and pan
      b. Column
      c. Wall
      d. Wall footing
      e. Slab sides
   2. Wood and steel combination
      a. Column
      b. Wall
      c. Wall footing

II. FOUNDATION FORMS

A. Column Footing
   1. Round
      a. Manufactured fiber
      b. Manufactured steel
   2. Pyramid
   3. Square

a. Battered or plywood
b. Stepped

4. Manipulation
a. Measuring and cutting
b. Nailing and squaring
c. Locating and leveling
d. Anchoring

V. Wall and Grade Beam Footings

1. Wood sides
a. Measuring and cutting
b. Staking and nailing
c. Plumbing and squaring

2. Stiffening
a. Ledger
b. Wale
(1) Cleats
(2) Spreaders

3. Hardware
a. Snap-ties
b. Jiffie clamps

4. Support
a. Braces
b. Backfill

III. COLUMN AND WALL FORMS

A. Column

1. Wood sides
a. Measuring and cutting
b. Stiffening and nailing

2. Template locating

3. Squaring and plumbing

4. Strengthening
a. Stud stiffeners
b. Wood yokes
c. Steel clamps

5. Bracing

B. Wall

1. Wood sides
a. Measuring and cutting
b. Stiffening and nailing

2. Aligning

3. Squaring, leveling and plumbing

4. Strengthening
a. Studs
b. Wales
c. Sills or plates

5. Clamping hardware
a. Snap-ties
b. Coil ties

c. Bolt ties
d. Jiffie clamps
6. Openings and steps
a. Baffling
b. Window forms
c. Door bricks
d. Tubes and cores
7. Bracing

IV. BEAMS AND CEILING

A. Basic Beam Form
1. Solid beam bottom
2. Shores
a. T-head
b. L-head
3. Wood sides
a. Measuring and cutting
b. Strengthening and nailing
4. Studs or cleats
5. Wales and ledgers
6. Kickers
7. Aligning and leveling

B. Reinforcements
1. Clamping hardware
a. Snap-tie
b. Bolt-tie
c. Coil-tie
d. Jiffie clamp
2. Final leveling and alighning
a. Shore wedges
b. Steel safety shores
c. Screw jack

C. Ceiling Form
1. Wood slab form
2. Joists and stringers
3. Shoring
a. Ellis clamp and purlin
b. Ellis purlin splices
c. Purlin and wedges
d. Steel safety shore
e. Screw jack
4. Leveling
a. Purlin bench mark
b. Tight-line

V. SAFE STRIPPING

A. Ceilings
1. Shores or purlin
2. Ceiling bottoms

a. Prompt nail removal
b. Scraping
c. Oiling
d. Storing

B. Walls and Columns
1. Ties
2. Clamps
a. Clean
b. Store
3. Wales
4. Studs
5. Sides
a. Prompt nail removal
b. Scraping
c. Oiling
d. Storing

C. Footings
1. Ties
2. Clamps
a. Clean
b. Store
3. Wales
4. Sides
a. Prompt nail removal
b. Scraping
c. Oiling
d. Storing

VI. APPLIED MATHEMATICS

A. Column Footing Materials - English and Metric
1. Square and linear
a. Sides
b. Ends
2. Linear
a. Wales
b. Stakes
c. Cleats
d. Braces and spreaders

B. Wall and Grade Beam Footing Materials
1. Square and linear
a. Sides
b. Ends
c. Steps and baffles
2. Linear
a. Wales
b. Stakes
c. Cleats
d. Braces and spreaders

C. Column and Wall Materials
   1. Square and linear
      a. Front
      b. Side or end
   2. Linear
      a. Studs
      b. Sills or plates
      c. Wales
      d. Yokes

D. Beams and Ceiling Materials
   1. Square and linear
      a. Beam sides
      b. Beam ends or baffles
      c. Ceiling bottoms
      d. Joists or stringers
   2. Linear
      a. Beam plank bottom
      b. Ledger
      c. Wales
      d. Plates or kickers
      e. Cleats
      f. Shores or purlin
      g. Shore plates and wedges

E. Costs of Materials
   1. Plywood
   2. Tongue and groove or shiplap
   3. Stiffeners 2" x 4" and 2" x 6"
   4. Planking 2" x 8"
   5. Shoring 4" x 4"
   6. Stringers 4" x 6" amd 4" x 8"
   7. Cleats and braces 1" x 3"
   8. Form releasing oil
   9. Form nails
   10. Masonry nails
   11. Rentals
      a. Machinery
      b. Power tools
      c. Form clamps

VII. QUINMESTER POST-TEST

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A P P E N D I X

Quinmester Post-Test Sample

QUINMESTER POST-TEST

Name_____Date_____Score_____

Multiple Choice

1. The purpose of concrete forms is to
   a. contain.
   b. pour.
   c. hard.
   d. cement.

2. Form plywood is mostly used for
   a. stiffening.
   b. sides.
   c. wales.
   d. ends.

3. Clamps and ties are used to add
   a. adhesive.
   b. weight.
   c. character.
   d. strength.

4. Manufactured forms are usually made of
   a. wood.
   b. steel.
   c. masonite.
   d. studs.

5. Walls are strengthened by the use of
   a. columns.
   b. corners.
   c. snap-ties.
   d. tightline.

6. The purpose of snap-ties is to
   a. form.
   b. stop.
   c. strengthen.
   d. tie boards.

7. A quality constructed wall is
   a. new.
   b. stepped.
   c. plumb.
   d. wale.

8. Wood studs are used to stiffen
   a. wall forms.
   b. wales.
   c. shores.
   d. concrete.

9. The main purpose of a jiffie clamp is to
   a. tighten.
   b. push.
   c. spread.
   d. hold.

10. A column locating template is nailed to the
   a. wood yoke.
   b. wall.
   c. floor or footing.
   d. braces.

11. To prevent a wall form from bursting we use
   a. form oil.
   b. yokes.
   c. templates.
   d. metal ties.

12. Snap-ties and clamps would be considered
   a. rentals
   b. hardware.
   c. purlin.
   d. straighteners.

13. Ceiling forms are supported by
   a. studs.
   b. braces
   c. wales.
   d. purlin.

14. Stringers are supported by
   a. studs.
   b. braces.
   c. wales.
   d. purlin.

15. Hard hats are especially necessary when removing
   a. kickers.
   b. ceiling forms.
   c. nails.
   d. scrap.

16. Nails should be removed from stripped forms
   a. after storing.
   b. before storing.
   c. immediately.
   d. after work.

17. Safety hats should be worn on the job
   a. constantly.
   b. when nailing.
   c. part time.
   d. when needed.

18. Safety glasses should be worn when striking
    a. cleats.
    b. forms.
    c. spikes.
    d. masonry nails.

19. Safety shoes should be worn on the job by
    a. all tradesmen.
    b. carpenters and masons.
    c. laborers.
    d. laborers and masons.

20. Shoring heighth is adjusted by using
    a. planks.
    b. wedges.
    c. plywood.
    d. plates.

ANSWER KEY TO QUINMESTER POST-TEST

1. a
2. b
3. d
4. b
5. a
6. c
7. c
8. a
9. d
10. c
11. d
12. b
13. d
14. d
15. b
16. c
17. a
18. d
19. a
20. b